

1160-3 CONSTRUCTION METHODS

Before use, furnish the Engineer detailed brochures, specifications and other manufacturer's data that completely describe the performance criteria, installation and instructions for the crash cushion. Ensure that the crash cushion is rated for at least the same speed as the facility on which it will be used.

The Contractor may provide a portable base for installation. When a portable base is used, provide one that is designed or approved by the manufacturer of the temporary crash cushion.

Install temporary crash cushions in accordance with the manufacturer's specifications.

Use temporary crash cushions that have a yellow reflective end treatment to delineate the approach end of the crash cushion to oncoming traffic.

Repair any pavement damaged by the installation or removal of a temporary crash cushion.

Repair or replace within 24 hours any temporary crash cushion that becomes crushed or otherwise damaged to the point that it will not perform its intended purpose. Suspend all construction activities until the temporary crash cushion is repaired or replaced. Provide safe control of traffic until the temporary crash cushion has been repaired or replaced using approved methods.

1160-4 MEASUREMENT AND PAYMENT

Temporary Crash Cushions will be measured and paid as the actual number of crash cushions furnished, satisfactorily installed and accepted by the Engineer.

Reset Temporary Crash Cushions will be measured and paid as the actual number of crash cushion relocations as directed.

Repair or replace damaged temporary crash cushions at no cost to the Department. Repair or replace damaged pavement at no cost to the Department.

Payment will be made under:

Pay Item	Pay Unit
Temporary Crash Cushion	Each
Reset Temporary Crash Cushion	Each

SECTION 1165 TRUCK MOUNTED ATTENUATORS

1165-1 DESCRIPTION

Furnish, install, operate, maintain and relocate truck mounted attenuators (TMA).

1165-2 MATERIALS

Refer to Division 10.

Item	Section
Truck Mounted Attenuators	1089-9

Use TMAs that meet NCHRP 350 Test Level II or III for transportation management devices and are on the NCDOT Approved Product List.

Historical performance of the TMA will help determine the future use of the material by the Department, even if the TMA has been approved. Poor performance of TMA at any site, whether or not related to a specific contract, may be grounds for non-acceptance of a product on any project under contract.

Section 1170

1165-3 CONSTRUCTION METHODS

Before use, furnish the Engineer detailed brochures, specifications and other manufacturer's data that completely describes the performance criteria, installation and instructions for the TMA.

Use only TMAs that meet the crash test requirements of Subarticle 1089-9(A).

Do not park TMAs against rigid objects (i.e. bridge piers or portable concrete barrier) except as a temporary safety measure and in no case for longer than 72 hours. Install the TMA on a truck that is fully operational, in good running order and in accordance with the manufacturer's specifications.

Use the appropriate lighting and delineation on the truck and TMAs as shown in the contract.

Repair or replace within 24 hours any attenuator that becomes crushed or otherwise damaged so that it will perform its intended purpose. Suspend all construction activities until the attenuator is repaired or replaced. Provide safe control of traffic until the attenuator has been repaired by using approved methods.

1165-3 MEASUREMENT AND PAYMENT

TMA will be measured and paid as the maximum number of TMAs acceptably placed and in use at any one time during the life of the project for all operations other than Moving and Mobile Operations. TMAs will be incidental to all moving and mobile operations. In the case of emergency situations, TMAs will not be paid when payment has already been made for a stationary unit.

Relocation of TMAs will be incidental to the measurement of the quantities of TMAs and no separate payment will be made.

Payment will be made under:

Pay Item	Pay Unit
TMA	Each

SECTION 1170 POSITIVE PROTECTION

1170-1 DESCRIPTION

Furnish, install, secure, maintain, remove and reset portable concrete barrier or water filled barrier.

1170-2 MATERIALS

Refer to Division 10.

Item	Section
Anchor Bolts	1072-4
Anchor Bolt Adhesive	1081
Freeze-Thaw Durable Grout, Nonshrink	1003
Guardrail and Barrier Delineators	1088-2
Portable Concrete Barrier	1077

Provide grout with a compressive strength at 3 days of at least 5,000 psi for portable concrete barriers.

Provide portable concrete barrier that meets NCHRP 350 Test Level III. Alternatively, provide water filled barrier that meets NCHRP 350 Test Level II for work zones that have a posted speed limit of 45 mph or less. Use barrier on the NCDOT Approved Product List.